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SENT VIA ELECTRONIC MAIL

August 19, 2022

Mr. Kenneth Komar
Principal Geologist
New Jersey Department of Environmental Protection
Bureau of Water Allocation & Well Permitting
P.O. Box 420, Mail Code 04Q
Trenton, New Jersey 08625-0420

Re: Waterfront Area (IAOC C1/C2) Recovery Well Information
ExxonMobil Site Remediation Activities
Bayway Refinery Complex
1400 Park Avenue
Linden, Union County, New Jersey
Program Interest ID/Permit No. 2633P
Activity No. WAP180001

Dear Mr. Komar:

In accordance with the requirements of Water Allocation Permit No. 2633P, Kleinfelder, Inc. (Kleinfelder), on behalf of ExxonMobil Environmental and Property Solutions Company (ExxonMobil), is submitting this letter to provide the Department with updated recovery well information for the Waterfront Area hydraulic control system that will be operated at the Bayway Refinery Complex (BRC). The Waterfront Area system, also referred to as the Investigative Area of Concern (IAOC) C1/C2 system, was in the final design and initial construction phases when the Water Allocation Permit application was submitted in 2018 and Permit No. 2633P was issued in May 2019. As of the date of this letter, construction of the remediation system is substantially complete and full-time operation is anticipated to begin in September or October of this year.

The information provided with the 2018 permit application package included proposed details for 22 recovery wells anticipated for installation and operation as part of the Waterfront Area system (RW-C1 through RW-C22/C22A). During the final design phase, several subsurface pipelines were identified within the alignment of the hydraulic barrier wall alignment which required modifications to the hydraulic control system design and the incorporation of additional recovery wells. To date, a total of 23 recovery wells have been installed and connected to the system piping network (RW-C1R through RW-C5R and RW-C6 through RW-C23), one well has been installed but not yet connected to the system (RW-C24), and three additional wells are planned for installation and connection within the next year (RW-C25 through RW-C27).

Attached to this letter are the following:

1. A site map depicting the location of the 24 existing and three planned Waterfront Area (C1/C2) system recovery wells;

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2. An updated version of the Ground Water Diversion List prepared for the Waterfront Area hydraulic control system (originally submitted per Form BWA-001A, Section D, Item 4); and
3. An updated version of Addendum A prepared for the Waterfront Area hydraulic control system (originally submitted per Form BWA-001A, Section D, Item 5).

The calibration record for the Waterfront Area (C1/C2) hydraulic control system discharge totalizing flow meter was previously submitted online on March 23, 2022.

The Department's continued assistance with permitting matters related to Water Allocation Permit No. 2633 is appreciated. Please do not hesitate to contact Matt Kuchta of Kleinfelder at mkuchta@kleinfelder.com or 609.631.1831, if you have any questions about the information presented herein or ExxonMobil site remediation activities at the BRC.

Sincerely,
Kleinfelder, Inc.

Matthew E. Kuchta, PE
Principal Engineer

Paul C. Lucuski, PE
Program Manager

Enclosures (3)

cc: M. Forlenza – ExxonMobil (electronically)
S. Ferreira– USEPA (electronically)
C. Zielinski – NJDEP (electronically)
M. Renzulli – LSRP (electronically)
D. LaMond – Phillips 66 (electronically)
C. McCardell – Stantec (electronically)

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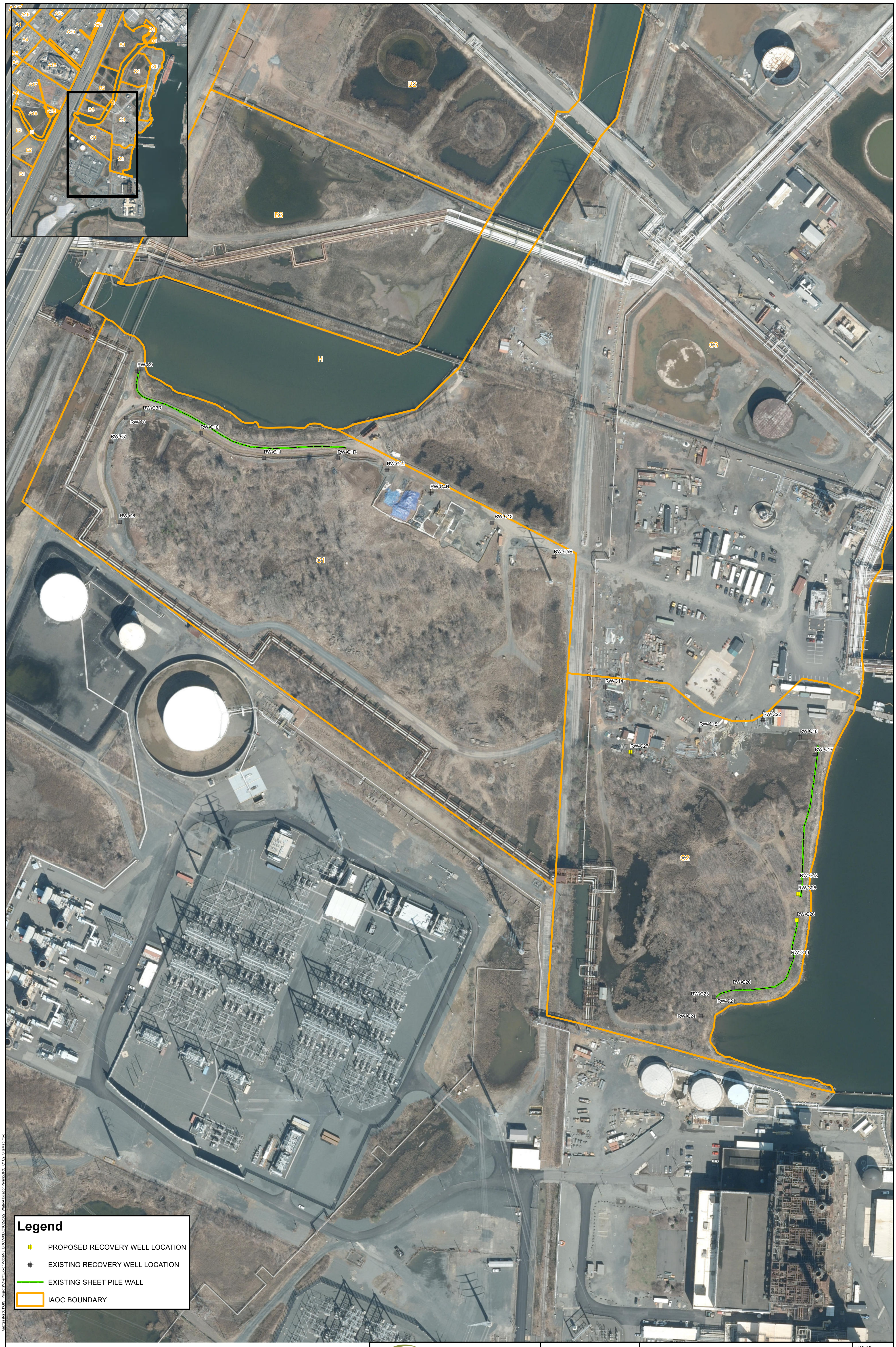
FIGURE 1

SITE PLAN
WATERFRONT AREA (C1/C2) HYDRAULIC CONTROL SYSTEM RECOVERY WELLS



\\azrgisstorp01\GIS_Projects\Client\ExxonMobil\NJ_BRC\MXD\C1C2\2022_WaterAllocationPermit\BRC_C1C2_SiteMap.mxd

0 100 200 Feet

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PROJECT NO.	20223959
DRAWN:	8/19/2022
DRAWN BY:	B. PACCIONE
CHECKED BY:	M. KUCHTA

BRC_C1C2_SiteMap

SITE PLAN
IAOCs C1 AND C2

BAYWAY REFINERY COMPLEX
LINDEN, NEW JERSEY

FIGURE

1

REVISED DIVERSION LIST
UPDATE TO NJDEP FORM BWA-001A, SECTION D, ITEM 4

WATERFRONT AREA (C1/C2) HYDRAULIC CONTROL SYSTEM

Ground Water Diversion List Addendum
Water Allocation Permit No. 2633P
NJDEP Form BWA-001A, Section D, Item 4

ExxonMobil Remediation Activities at the Bayway Refinery Complex
1400 Park Avenue
Linden, Union County, New Jersey

Waterfront Area (C1/C2) Hydraulic Control System (Start-up Phase - Full-Time Operation Anticipated 4Q 2022)					
State Well Permit No.	**Well Local Name**	**Location Description**	**Existing (E) Proposed (P)**	**Estimated Maximum Withdrawal Rate (million gallons)**	
				Per Month	**Per Year**
E202000448	RW-C1R	Bayway Refinery Complex - C1/C2	E	System Total: 0.66	System Total: 7.88
E202112710	RW-C2R	Bayway Refinery Complex - C1/C2	E		
E201912261	RW-C3R	Bayway Refinery Complex - C1/C2	E		
E202000449	RW-C4R	Bayway Refinery Complex - C1/C2	E		
E202000450	RW-C5R	Bayway Refinery Complex - C1/C2	E		
E202000451	RW-C6	Bayway Refinery Complex - C1/C2	E		
E202000452	RW-C7	Bayway Refinery Complex - C1/C2	E		
E202000453	RW-C8	Bayway Refinery Complex - C1/C2	E		
E202000454	RW-C9	Bayway Refinery Complex - C1/C2	E		
E201912262	RW-C10	Bayway Refinery Complex - C1/C2	E		
E201912263	RW-C11	Bayway Refinery Complex - C1/C2	E		
E202000455	RW-C12	Bayway Refinery Complex - C1/C2	E		
E202000456	RW-C13	Bayway Refinery Complex - C1/C2	E		
E202112706	RW-C14	Bayway Refinery Complex - C1/C2	E		
E202112707	RW-C15	Bayway Refinery Complex - C1/C2	E		
E202112708	RW-C16	Bayway Refinery Complex - C1/C2	E		
E202112709	RW-C17	Bayway Refinery Complex - C1/C2	E		
E202112711	RW-C18	Bayway Refinery Complex - C1/C2	E		
E202112712	RW-C19	Bayway Refinery Complex - C1/C2	E		
E202112713	RW-C20	Bayway Refinery Complex - C1/C2	E		
E202112714	RW-C21	Bayway Refinery Complex - C1/C2	E		
E202112715	RW-C22	Bayway Refinery Complex - C1/C2	E		
E202112716	RW-C23	Bayway Refinery Complex - C1/C2	E		
E202207011	RW-C24	Bayway Refinery Complex - C1/C2	E		
Pending	RW-C25	Bayway Refinery Complex - C1/C2	P		
Pending	RW-C26	Bayway Refinery Complex - C1/C2	P		
Pending	RW-C27	Bayway Refinery Complex - C1/C2	P		

Notes:

1. State well permit applications have yet to be submitted for those marked as "Pending". Permits will be obtained once design details have been finalized.

2. Recovery rates are monitored per system, not per individual extraction well. Rates shown are anticipated based on groundwater model simulations.

3. The data provided above for the Waterfront Area C1/C2 Hydraulic Control System is an update to the original information provided with the application for Water Allocation Permit No. 2633P. This addendum includes as-built recovery well information and additional proposed recovery wells.

REVISED DIVERSION POINT LOCATION AND CONSTRUCTION DETAILS
UPDATE TO ADDENDUM A, NJDEP FORM BWA-001A, SECTION D, ITEM 5

WATERFRONT AREA (C1/C2) HYDRAULIC CONTROL SYSTEM

Revised Addendum A
Water Allocation Permit No. 2633P
NJDEP Form BWA-001A, Section D, Item 5

ExxonMobil Remediation Activities at the Bayway Refinery Complex
1400 Park Avenue
Linden, Union County, New Jersey

	Existing System - Start-up Phase **Waterfront Area (C1/C2)** **Hydraulic Control System**						
State Well Permit No.	E202000448	E202112710	E201912261	E202000449	E202000450	E202000451	E202000452
Well Local Name	RW-C1R	RW-C2R	RW-C3R	RW-C4R	RW-C5R	RW-C6	RW-C7
Date Drilled	1/29/2020	2/16/2022	11/19/2019	1/29/2020	1/27/2020	1/23/2020	1/24/2020
Total Finished Depth (feet) (include tailpiece if any)	25	28	29	24.5	25	29	30
Depth to Top of Open Hole Interval or Screen (feet)	6	7	5	5.5	6	5	6
Depth to Bottom of Open Hole Interval or Screen (feet)	21	24	25	20.5	21	25	26
Rated Pump Capacity (gpm)	13	13	13	13	13	13	13
Yield (gpm)	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Aquifer/Geological Formation	Overburden, gravel, sand, silt	Overburden, gravel, sand, clay	Overburden, gravel, sand, silt	Overburden, gravel, sand, silt, clay	Overburden, gravel, sand, silt	Overburden, gravel, sand, silt	Overburden, gravel, sand, clay, silt
Elevation Information:							
Site Elevation	12	6	8	12	11	7	8
Elevation System Description	Feet Above Sea Level	Feet Above Sea Level	Feet Above Sea Level	Feet Above Sea Level	Feet Above Sea Level	Feet Above Sea Level	Feet Above Sea Level
Elevation Method Description	Licensed Surveyor	Licensed Surveyor	Licensed Surveyor	Licensed Surveyor	Licensed Surveyor	Licensed Surveyor	Licensed Surveyor
Absolute Elevation Accuracy	1	1	1	1	1	1	1
Absolute Elevation Accuracy Units (feet or meters)	Feet	Feet	Feet	Feet	Feet	Feet	Feet
Location Information:							
X coordinate (e.g. Longitude) of well center	572,422.8	573,511.0	571,968.4	572,639.6	572,927.2	571,914.7	571,893.5
Y coordinate (e.g. Latitude) of well center	653,611.5	652,776.3	653714.9	653,531.1	653,380.2	653,463.1	653,648.0
Coordinate System Code and Description	01 New Jersey State Plane 83 - Feet	01 New Jersey State Plane 83 - Feet	01 New Jersey State Plane 83 - Feet	01 New Jersey State Plane 83 - Feet	01 New Jersey State Plane 83 - Feet	01 New Jersey State Plane 83 - Feet	01 New Jersey State Plane 83 - Feet
Coordinate Method Description	GPS	GPS	GPS	GPS	GPS	GPS	GPS
Absolute Location Accuracy	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Accuracy Units (feet or meters)	Feet	Feet	Feet	Feet	Feet	Feet	Feet

Revised Addendum A
Water Allocation Permit No. 2633P
NJDEP Form BWA-001A, Section D, Item 5

ExxonMobil Remediation Activities at the Bayway Refinery Complex
1400 Park Avenue
Linden, Union County, New Jersey

	Existing System - Start-up Phase **Waterfront Area (C1/C2)** **Hydraulic Control System**						
State Well Permit No.	E202000453	E202000454	E201912262	E201912263	E202000455	E202000456	E202112706
Well Local Name	RW-C8	RW-C9	RW-C10	RW-C11	RW-C12	RW-C13	RW-C14
Date Drilled	1/24/2020	1/30/2020	11/21/2019	11/22/2019	1/28/2020	1/24/2020	1/4/2022
Total Finished Depth (feet) (include tailpiece if any)	30	29	27	25	25	24	24
Depth to Top of Open Hole Interval or Screen (feet)	6	5	8	6	6	5	5
Depth to Bottom of Open Hole Interval or Screen (feet)	26	25	23	21	21	20	20
Rated Pump Capacity (gpm)	13	13	13	13	13	13	13
Yield (gpm)	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Aquifer/Geological Formation	Overburden, gravel, sand, silt	Overburden, gravel, sand, silt	Overburden, gravel, sand, silt	Overburden, gravel, sand, silt	Overburden, gravel, sand, silt	Overburden, gravel, sand, silt, clay	Overburden, gravel, sand, silt
Elevation Information:							
Site Elevation	8	6	9	11	11	11	8
Elevation System Description	Feet Above Sea Level	Feet Above Sea Level	Feet Above Sea Level	Feet Above Sea Level	Feet Above Sea Level	Feet Above Sea Level	Feet Above Sea Level
Elevation Method Description	Licensed Surveyor	Licensed Surveyor	Licensed Surveyor	Licensed Surveyor	Licensed Surveyor	Licensed Surveyor	Licensed Surveyor
Absolute Elevation Accuracy	1	1	1	1	1	1	1
Absolute Elevation Accuracy Units (feet or meters)	Feet	Feet	Feet	Feet	Feet	Feet	Feet
Location Information:							
X coordinate (e.g. Longitude) of well center	571,929.5	571,956.0	572,103.2	572,250.6	572,537.5	572,782.7	573,047.3
Y coordinate (e.g. Latitude) of well center	653,704.8	653,815.3	653,670.2	653,612.4	653,584.6	653,459.7	653,077.7
Coordinate System Code and Description	01 New Jersey State Plane 83 - Feet	01 New Jersey State Plane 83 - Feet	01 New Jersey State Plane 83 - Feet	01 New Jersey State Plane 83 - Feet	01 New Jersey State Plane 83 - Feet	01 New Jersey State Plane 83 - Feet	01 New Jersey State Plane 83 - Feet
Coordinate Method Description	GPS	GPS	GPS	GPS	GPS	GPS	GPS
Absolute Location Accuracy	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Accuracy Units (feet or meters)	Feet	Feet	Feet	Feet	Feet	Feet	Feet

Revised Addendum A
Water Allocation Permit No. 2633P
NJDEP Form BWA-001A, Section D, Item 5

ExxonMobil Remediation Activities at the Bayway Refinery Complex
1400 Park Avenue
Linden, Union County, New Jersey

	Existing System - Start-up Phase **Waterfront Area (C1/C2)** **Hydraulic Control System**						
State Well Permit No.	E202112707	E202112708	E202112709	E202112711	E202112712	E202112713	E202112714
Well Local Name	RW-C15	RW-C16	RW-C17	RW-C18	RW-C19	RW-C20	RW-C21
Date Drilled	1/10/2022	2/24/2022	12/17/2021	1/13/2022	1/25/2022	1/19/2022	1/27/2022
Total Finished Depth (feet) (include tailpiece if any)	25	27	24	28	33	29	30
Depth to Top of Open Hole Interval or Screen (feet)	6	6	5	4	7	5	6
Depth to Bottom of Open Hole Interval or Screen (feet)	21	23	20	24	29	25	26
Rated Pump Capacity (gpm)	13	13	13	13	13	13	13
Yield (gpm)	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Aquifer/Geological Formation	Overburden, gravel, sand, clay	Overburden, gravel, sand, clay	Overburden, gravel, sand, clay	Overburden, gravel, sand, clay	Overburden, gravel, sand, clay	Overburden, gravel, silt, sand, clay	Overburden, gravel, silt, sand, clay
Elevation Information:							
Site Elevation	7	5	6	7	7	7	6
Elevation System Description	Feet Above Sea Level	Feet Above Sea Level	Feet Above Sea Level	Feet Above Sea Level	Feet Above Sea Level	Feet Above Sea Level	Feet Above Sea Level
Elevation Method Description	Licensed Surveyor	Licensed Surveyor	Licensed Surveyor	Licensed Surveyor	Licensed Surveyor	Licensed Surveyor	Licensed Surveyor
Absolute Elevation Accuracy	1	1	1	1	1	1	1
Absolute Elevation Accuracy Units (feet or meters)	Feet	Feet	Feet	Feet	Feet	Feet	Feet
Location Information:							
X coordinate (e.g. Longitude) of well center	573,266.8	573,500.4	573,536.0	573,501.3	573,480.7	573,344.7	573,301.2
Y coordinate (e.g. Latitude) of well center	652,977.4	652,960.8	652,918.5	652,624.1	652,444.6	652,375.8	652,355.6
Coordinate System Code and Description	01 New Jersey State Plane 83 - Feet	01 New Jersey State Plane 83 - Feet	01 New Jersey State Plane 83 - Feet	01 New Jersey State Plane 83 - Feet	01 New Jersey State Plane 83 - Feet	01 New Jersey State Plane 83 - Feet	01 New Jersey State Plane 83 - Feet
Coordinate Method Description	GPS	GPS	GPS	GPS	GPS	GPS	GPS
Absolute Location Accuracy	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Accuracy Units (feet or meters)	Feet	Feet	Feet	Feet	Feet	Feet	Feet

Revised Addendum A
Water Allocation Permit No. 2633P
NJDEP Form BWA-001A, Section D, Item 5

ExxonMobil Remediation Activities at the Bayway Refinery Complex
1400 Park Avenue
Linden, Union County, New Jersey

	Existing System - Start-up Phase **Waterfront Area (C1/C2)** **Hydraulic Control System**					
State Well Permit No.	E202112715	E202112716	E202207011	*Pending*	*Pending*	*Pending*
Well Local Name	RW-C22	RW-C23	RW-C24	RW-C25	RW-C26	RW-C27
Date Drilled	2/8/2022	2/1/2022	8/16/2022	Pending	Pending	Pending
Total Finished Depth (feet) (include tailpiece if any)	27	30	28	*< 30*	*< 30*	*< 30*
Depth to Top of Open Hole Interval or Screen (feet)	6	6	2	*< 10*	*< 10*	*< 10*
Depth to Bottom of Open Hole Interval or Screen (feet)	23	26	24	*< 30*	*< 30*	*< 30*
Rated Pump Capacity (gpm)	13	13	13	*13*	*13*	*13*
Yield (gpm)	< 1	< 1	< 1	*< 1*	*< 1*	*< 1*
Aquifer/Geological Formation	Overburden, gravel, sand	Overburden, gravel, sand	Overburden, gravel, sand, silt	*Overburden*	*Overburden*	*Overburden*
Elevation Information:						
Site Elevation	7	7	7	*7*	*7*	*7*
Elevation System Description	Feet Above Sea Level	Feet Above Sea Level	Feet Above Sea Level	*Feet Above Sea Level*	*Feet Above Sea Level*	*Feet Above Sea Level*
Elevation Method Description	Licensed Surveyor	Licensed Surveyor	Licensed Surveyor	*Licensed Surveyor*	*Licensed Surveyor*	*Licensed Surveyor*
Absolute Elevation Accuracy	1	1	1	*1*	*1*	*1*
Absolute Elevation Accuracy Units (feet or meters)	Feet	Feet	Feet	*Feet*	*Feet*	*Feet*
Location Information:						
X coordinate (e.g. Longitude) of well center	573,415.6	573,257.3	573,270	*573,508*	*573,494*	*573,106*
Y coordinate (e.g. Latitude) of well center	653,000.0	652,348.5	652,310	*652,596*	*652,534*	*652,926*
Coordinate System Code and Description	01 New Jersey State Plane 83 - Feet	01 New Jersey State Plane 83 - Feet	01 New Jersey State Plane 83 - Feet	*01 New Jersey State Plane 83 - Feet*	*01 New Jersey State Plane 83 - Feet*	*01 New Jersey State Plane 83 - Feet*
Coordinate Method Description	GPS	GPS	GPS	*Digital Image (GeoWeb)*	*Digital Image (GeoWeb)*	*Digital Image (GeoWeb)*
Absolute Location Accuracy	1.0	1.0	3.0	*Unknown*	*Unknown*	*Unknown*
Accuracy Units (feet or meters)	Feet	Feet	Meters	*Feet*	*Feet*	*Feet*

Revised Addendum A
Water Allocation Permit No. 2633P
NJDEP Form BWA-001A, Section D, Item 5

ExxonMobil Remediation Activities at the Bayway Refinery Complex
1400 Park Avenue
Linden, Union County, New Jersey

Notes:

1. The data provided above for the Waterfront Area C1/C2 Hydraulic Control System is an update to the original information provided with the application for Water Allocation Permit No. 2633P. This addendum includes as-built recovery well information and additional proposed recovery wells as of 8/17/2022.
2. Data provided for pending recovery wells RW-C25 through RW-C27 is proposed and may not be representative of final installed conditions. Cells with proposed data are shaded gray.